FLOWERS OF CRYSTAL

TEACHERS' NOTES

4MATION

PACKAGE CONTENTS

1. disc or tape:
   - (a) The Introductory Story
   - (b) The Adventure Part 1
   - (c) The Adventure Part 2
   - (d) Utility to print worksheets

2. Introductory Story (audio tape)

3. Introductory Story (illustrated booklet)

4. Teachers' Notes

5. Map

6. Worksheets (for copying)

The programs are intended for use on the
BBC Model B Computer (O.S. 1.0 / 1.2)
and have been tested on machines using
BASIC1, BASIC2,
Acorn, Watford and Pace DFS.

Problems, queries, comments:
4MATION will be pleased to hear from you.

FLOWERS OF CRYSTAL

Teachers' Notes

4MATION Educational Resources
Linden Lea, Rock Park,
Barnstaple, Devon.

Contents

Introduction

"Flowers of Crystal" was designed to provide a stimulus for creative activities within the classroom. The program was written with the following points in mind:

1. All children, to a greater or lesser degree, are blessed with the gifts of curiosity and imagination.

2. Although outwardly more sophisticated than the children of yesterday the adults of tomorrow still love fantasy.

3. The establishment of an environment in which learning may occur is far more important than the preparation of a good lesson.

4. In schools, today, much emphasis is placed on co-operation, discussion and other activities requiring social interaction.

5. It is generally recognised that the skills necessary for successful research, record keeping, planning and organisation of work etc. should be developed in the primary years.

6. The child-to-computer ratio in the majority of our schools is such that the use of the machine on an individual basis is not cost-effective.

7. The potential of the computer in promoting activity away from the keyboard is recognised by a small, but increasing, number of teachers.

8. In our rapidly-changing society personal creativity is likely to become more important. (Technological change may be measured by the macrame index. For every new robot there are two new weavers, rug makers, potters and geranium growers).

9. It is impossible to please all the people all the time (especially teachers and reviewers of software).

10. The story is not meant to to be a vehicle for any political or social messages although there is certainly a moral viewpoint intended. Any imbalance discovered may always be countered in the classroom. (Sexism researchers will note that Rumala is a woman and Jim a man — the gender of the Pouncer has yet to be established).

11. Fun in the classroom does not have to be the prelude to anarchy and chaos.

Notes on the Programs

All Programs

The ESCAPE key is disabled. Holding down SHIFT and pressing red key f0 will cause the program to start again. This enables a 'new' group of children at the keyboard to begin at the beginning.

Pressing BREAK will destroy the program — sorry, but there are good reasons why this is necessary. Typing 'OLD' will not revive the program. Cassette-users should be especially careful that children are warned about this. The BREAK protector supplied with the package will provide additional security.

The Introductory Story

The story appears in double-height text which scrolls upwards by page (rather than by line) the bottom line of each page becoming the top line of the next page. The SPACE bar is used to begin the story and to 'turn' the pages.

The Utility Program

This program may only be used when a suitable printer is connected to the micro. The worksheets are printed in 80 character mode (80 characters per line). As each sheet is completed there is an option to print another sheet. A negative reply returns the user to the menu.

The Adventure (Parts 1 and 2)

It is intended that the programs should be as easy as possible to operate.

1. All inputs may be in either upper or lower case — the computer will automatically convert upper case to lower case text on the screen.

2. When children are making a keyboard response they may DELETE their input at any time before they commit themselves by pressing RETURN. When a text (ie non-numeric) input is required the computer will examine only the first two letters except in the case of 'Yes/No' responses when the first character only is of significance. (Please see 'Note Concerning Spelling' on the next page).

3. To assist with response procedure the non-essential parts of the keyboard are disabled. For example: where a 'Yes/No' input is expected only the Y,E,S,N and O keys will be enabled. Pressing any other key will cause a 'bleep'.

4. At the beginning of the adventure programs the sound level may be set. Volume levels vary considerably from machine to machine (according to the setting of the volume control beneath the keyboard).

Note Concerning Spelling

Only the first two letters of a response are significant. Whether children are told that typing 'me' will have the same effect as typing 'metal detector' is a matter for individual teachers. What does concern some people, however, is that typing 'mettaledeetekterr' or even 'metal mickey' will be accepted by the computer as a correct response. Having canvassed a cross-section of teachers and discovered that opinions are divided on this issue the author reserves the right to use his own judgement. His justifications are as follows:

(a) while accuracy in spelling is to be encouraged this adventure is not a test of spelling

(b) there comes a stage when typing in a full response becomes a chore

(c) less-able children will find the programs easier to use (and certainly less frustrating)

(d) teachers do not correct every wrong spelling in their children's written work

(e) by 'understanding' the intention of the child whose spelling is incorrect the computer is exhibiting 'user-friendliness'.

'Crystal' in the Classroom

There is no right or wrong way to use 'Flowers of Crystal' with children as so much depends upon such factors as size of class, computer availability, the age (range) of the children and the demands of the school curriculum and timetable.

The package was written to provide the basis for a lengthy project rather than to keep a pair of children 'out of the way' for ten minutes. For children to tackle the adventure haphazardly could well prove tedious and frustrating for them.

Ideally the teacher should use the materials first. Notes on how to tackle the adventure are given elsewhere in this book and, while it is not essential that the teacher should have solved all the mysteries, first-hand experience is always valuable when children require assistance.

★ ★ ★ ★

It is imperative that before children attempt Part 1 of the adventure they should become acquainted with the situation on Crystal. The introductory story may be listened to (either on the audio tape or from the booklet) or it may be read on the screen or in the booklet. The choice of media will depend upon individual circumstances and preferences. A discussion following this would be of value as well as some direction concerning the method of tackling the adventure.

At an early stage the teacher needs to have considered the following questions:

How will the groups be selected?
How long will they work at the keyboard?
What format will be adopted for record keeping?
When away from the keyboard will children be engaged in activities associated with the project or in other class activities?
How often will class discussions be necessary?
Will children be allowed to work at playtime etc.?
How far will groups be allowed/able to manage themselves and/or organise their own work?
Will the written and illustrative work be retained by individual groups or displayed centrally?
Are the worksheets provided with the package suitable?
Do the children need special 'Crystal' log books?
Are the children to be encouraged to adopt roles?
Where do I fit into all this?

It may be decided to begin work on Part 1 with the whole class as near to the computer as possible. Once it is certain that they are familiar with the input procedures they may be allowed to continue on their own. It must be stressed that the keeping of records is essential although some teachers may wish the children to discover this fact for themselves. A rota system is necessary so that groups know when their next keyboard session will be.

The greatest problems arise where computer time is limited. The usual arrangements may need to be altered to accommodate the needs of the class.

Where time is limited it may be decided to have information-sharing sessions. Many teachers like to have a whole class final assault to avoid the problems caused by groups completing the mission at different times. Others allow the ones who finish first to assist the slower ones.

It is important that the teacher monitors progress in order to provide encouragement and/or assistance where necessary.

★ ★ ★ ★

Many of the scenes and characters in the programs (and in David Cowell's illustrations) are deliberately vague. The intention is to stimulate the imagination. If a Blid is never seen it will exist in numerous forms in the classroom. Likewise there are many unanswered questions in the adventure. Why is it never possible to get to the mountains? What exactly are Zap Gates and who put them there? What do the spells look like and how can they have different properties? Who or what are the Exiles? Part 2 ends quite abruptly when the Crystal Flower is located. Perhaps the story is only just beginning at this point. How is the flower to be used? Is Crystal saved? What happens to Grubble? Do the visitors from Earth return home?

Children should be encouraged to fill in the gaps left by the computer: in doing so they will make Crystal their own world.

The Tasks in the Adventure

Part 1

It is necessary to find the following items (in any order) and take them (altogether) to The Centre:

1. Special water
2. Gold pot
3. Fertiliser
4. Soil

At The Centre certain items of equipment may be selected but their purpose remains to be discovered.

Certain randomly-occurring hazards will be encountered on journeys. In most cases they will not be 'fatal' but, occasionally, may lead to the mission being aborted.

Part 2

The adventurer must find the six parts of the 'flower dream' and go to the castle. These parts are segments of the complete flower picture. There are twenty spells which may be obtained, used and lost during the mission. Their value in different locations must be discovered. The successful adventurer will have used the spells with care having discovered where and how to obtain them.

In the Danger Area Rumala has placed certain devices to bewilder and baffle the explorer. Important locations (where things happen) are fixed but when one is travelling between locations scenes and views may change at random. By keeping notes it is possible to discover which locations are real and which ones are the result of magic.

Notes for Busy Teachers

How to Survive Part 1

At The Centre

1. Take note of the Weather Report

2. Choose equipment

   (a) take one item — drink, warm coat or raincoat
       (as suggested by Weather Report)

   (b) take one item

       water tester — needed at Lake
       metal detector — needed in Forest
       soil tester — needed in Desert
       fertiliser tested — needed in City

   (c) take two items

       fright stick — repels Fright Freaks
       radio — to call Jim for assistance
       bubble gum — keeps Blids happy
       disguise kit — often useful, especially at factory

Expeditions

When following a path one hazard per journey will be encountered. Where no path exists the risks are doubled. Where suitable precautions have not been taken (eg by not carrying a fright stick or radio) there is an 80% chance of hazards being negotiated safely.

Suggested Route (not the only one)

1. take fertiliser tester and disguise kit
2. visit factory — collect City Pass
3. at City enter blue building and collect fertiliser
4. return to Centre — take water tester
5. at City enter yellow building — find lie detector
6. visit Lake — collect special water
7. return to Centre — take soil tester and radio
8. at Hills exchange radio for goggles
9. visit Desert — find soil
10. return to Centre — take metal detector
11. visit Forest — see Forest Grid — find gold pot
12. return to Centre

Location of Forest Hazards

N

W

E

S

	0	1	2	3	4	5	6	7
6		Z	Z	Z				
5	C		GOLD POT	C			C	
4	C		Z	C			C	
3	FROM LAKE							
2		Z	Z	Z				
1								FROM FACTORY
0		FROM HILLS	Z					

KEY

Z   Zap Gate
C   Capture

How to Survive Part 2

Face

First visit — give age as 197 (receive 5 spells)
Go to Globs
Subsequent visits — (receive 1 spell, if available)
Go to Stones

Globs

Options: follow Globs 1,2 or 3
Glob 1: go to Stones
Glob 2: use spell? YES (flower)
          look inside? YES (find spell)
          go to Toadstools
Glob 3: go to Horror

Stones

Options: touch stones 1-10
Stone 1: use a spell? NO
             go to Face
Stone 2: use a spell? NO
             go to Stones
Stone 3: find a spell
             go to Blid trap
Stone 4: provides clues
             go to Horror
Stone 5: use a spell? NO
             go to Globs
Stone 6: 'flower dream'
             go to Face
Stone 7: 'timeslip'
             go to Globs
Stone 8: use a spell? NO
             go to Paths
Stone 9: look inside? YES (find spell)
             go to Toadstools
Stone 10: look inside? NO
             go to Horror

River

Cross river? If NO go to Blid trap
             If YES use a flower spell

Paths

Options: follow left, middle or right path

Left path: look inside? YES (find spell)
        use a spell? YES (flower spell)
        go to River
Middle path: Blid trap
Right path: Look inside? NO
        go to Stones

Toadstools

Help us? YES (negotiate toadstools — win a spell)
Look inside? NO
Go to Horror

Volcano

Storm — use a vanishing spell or take a chance
Cave — use a moving spell
       move to a central position vertically
Sky Spitter — use a vanishing spell or close your eyes!

Horror

Use a spell? Yes
       moving spell — go to Paths
       vanishing spell — go to Face
       flower spell — flower dream — go to Paths

Blid Trap

Options: chew or escape
Chew: go to Volcano
Escape: go to Horror

Flower Dream Locations

Except at Stone 6 spells are needed to see the flower dreams which are located at:

Stone 6
Beyond Glob 2
Beyond Horror
Beyond River
At Castle
Left path

Using the package with a class of 11-12 year olds

Teresa Warner — Topsham Middle School

Before using the program with the children I took it home to become thoroughly familiar with it — an essential step for anyone wishing to use it, I feel. Whilst going through it myself I made notes on anything that sparked off an idea for creative work, and things which the children would need to take note of, themselves. From these ideas I made a set of workcards to guide the children towards investigative ways of thinking.

The children had had varying amounts of exposure to micro-computers before using the program, ranging from two new pupils to the school, who had none at all, to those who have one at home. This did not seem to make any difference to the children's confidence in using the micro. I grouped the children carefully for this work, ensuring a balance of abilities and personalities in each group (maximum four pupils).

I let the children discover for themselves that only the first few letters of a response were required. I found this to be an acceptable feature and helpful to those children who have difficulty with spelling and who might, otherwise, have become disinterested.

As the children became more familiar with the program I made some extra workcards to stimulate further discussion and creative work.

It is probably important to mention that the children requested to come into school early, to stay in at lunchtimes and after school to use the program. I can confidently say that every child in the class spent some of his/her own time in this way.

Once one group had discovered the 'password' and most children knew where two or three items of treasure could be found we had a whole class final mission so that all children would benefit from the experience of those who had completed the program first. The discussion which arose from this, across the groups, was very valuable. When we had done this most children wanted to 'have another go' to get the password by themselves.

I found the standard of creative work was good, particularly among the low achievers who were well stimulated by this exercise.

Ideas for Workcards (for Part 1)

Teresa Warner — Topsham Middle School

1. Writing your Expedition Log

You will need to work together and to use everybody's information. Write your log neatly and carefully, explaining where you went, what you took with you (and why you took it), and what happened on each stage of your journey.

You may use pictures, maps and diagrams to make your log more interesting.

The computer doesn't tell you everything. Use your imagination. What is it like inside the factory, forest or city? Who do you meet? Do they speak to you? Are you frightened? What does it smell like, sound like, feel like? What kind of person is Super Jim? Maybe you caught a glimpse of Grubble — what is he like?

Once you find out where an item of 'treasure' is hidden write an instruction chart (in the back of your log book) explaining how to get there and what to take with you.

2. Danger Ranger

It is your job to look out for danger on your journey.

Every time you meet

BLIDS

FRIGHT FREAKS

or

POUNCERS

Write down:

1. Where you meet them (eg between the Hills and the Factory)
2. How you try to escape from them
3. Whether you succeed or not
4. If not — what happens to you.

3. Wanted

A full description of

BLIDS,

FRIGHT FREAKS,

POUNCERS

and GRUBBLE'S GRABBERS

You can help! You have been there!

We need poems or descriptions to tell us how you know when they are near, where they may be lurking, what they live on, how they communicate, how they treat prisoners, what makes them angry etc.

Ideas for Workcards (for Part 2)

Peter Forrest — Topsham Middle School

Examples of Tasks for Individual Children in the Group

Guardian of Rumala's Stones

Rumala's stones are magical. If you touch them magic things happen. It's your job to note down what happens each time you touch each stone — not just what happens immediately but what happens two or three moves later. Does each number always produce the same result? Work our a way of charting them so that you can find out.

Spell Weaver

Your team will need to use a lot of spells. Your job is to learn everything there is to know about them: where you can obtain them, and how; where you used each spell, and what effect it had; and which kinds of spells work in which kind of situation.

Examples of Tasks for all Members of the Group

Choice Makers

You will need to make a lot of choices and you must keep a careful record of these choices. Examples:
What happens when you go with each of the Globs?
What happens when you follow one of the three paths?

Dream Seekers

There are six parts to the Flower of Crystal and your quest is to find the six parts of the Flower Dream which will put it back together again. It is vital that you should write down in detail where you found each part and how you gained it.

Log Compilers

At the end of each attempt you must sit down with the others in your team and make a clear log of everything that has happened. Charts and colour coding may well be helpful. You should also think up and write down suggestions for the approach your team should take on your next attempt.

A Teacher's Comments

Pat Fox — Preston Primary School, Torquay

The outstanding feature of 'Flowers of Crystal' was that it enabled me to see how effectively individual children evolve and carry out strategies, gather and process information, co-operate with each other, evaluate other children's ideas, imitate ideas and persevere over a period of time.

It gave me insight into the way that they think — which is of great value in all areas of the curriculum.

The program can be used as a core of a complete scheme of work right across the curriculum.

The program promotes much discussion between children and between child and teacher.

The value of 'spoken thoughts' is not always fully exploited in the classroom. The program enabled me to do this.

Ideas for Project Work

Language Development

Discuss the environmental damage caused by a variety of human factors: roads, industry, tourism, agriculture etc.

Compare Rumala's outlook on life with that of Grubble.

Outline the contrasts between the pre-tourism Crystal and the present world.

Consider the pressures on the Crystallians to develop their world as a tourists' paradise.

Write a holiday brochure for Crystal.

Compare our world with Crystal.

Organise a meeting of 'Friends of Crystal' and discuss possible courses of action.

Prepare a case for industrial development on Crystal to replace the holiday trade.

The Computer — friend or foe?

Write an adventure for others to undertake — use cards to allow for options/choices.

Maths.

Co-ordinates, Grids, Matrices (Bubble Gum Forest, Spells).

Directions, Movement (compass work, 'turtle' graphics).

Mapwork, scale, distances.

Recording and Presentation of data — tables, graphs

Probability, Chances, Choices (hazards, spells, options)

Science

Plant experiments:

plants growing in a variety of conditions

(a) naturally (b) artificially

the requirements of plants — air, light, water, warmth, food

Use a data base (eg Factfile, Quest) to build records in connection with the experiments.

Find out about plants with unusual qualities (Venus fly trap, rubber tree, foxglove, nettles, cotton, mistletoe, spinach!)

The weather — is our weather as variable as Crystal's? What causes weather? What is lightning?

Volcanoes and Deserts.

History, Geography

Environmental changes (eg the rain forests)

Ruined cities on Earth.

What factors have caused our world to change in appearance?

The forests of Britain.

Foreign influences — the Normans in Britain, Europeans in the New World.

Myths, legends, superstitions.

Standing stones.

Heroes and heroins.

Art

Look at the illustrations in the story booklet. They are constructed by combining 'doodles' suggested by different elements of the story. Try some of your own.

Produce posters of Crystal

(a) for the tourist trade (b) for the 'Friends of Crystal'

Make imaginative paintings of 'Crystalscapes' using shades of one colour only.

Produce accurate drawings of living plants.

Construct a textured collage showing various aspects of Crystal.

Drama

Consider these themes for drama sessions:-

Sweet dreams and nightmares.

Storms and eruptions.

Fright Freaks and friends.

Grubble bubble trouble.

Venturing into the unknown.

Waking up on another world.

Spells and enchantments.

Capture and escape.

Music

Record children's versions of the story accompanied by suitable sounds: space, danger, storms, discovery etc.

Find out about plants with unusual qualities.

Listen to 'atmospheric' music:

'Chariots of Fire', Stravinsky's 'Rite of Spring', Jean Michel Jarre's 'Oxygene', 'Equinoxe'.

For the really ambitious:- produce a musical drama based on the adventure.

Resources for Project Work

Compiled by Susan McCulloch — Devon Library Service

General Guides

Environmental Education: Sources of Information		D.E.S

Non-Fiction

ANGELSEA, D.	Experiments on Air Pollution	Wayland
	Experiments on Land Pollution	Wayland
	Experiments on Water Pollution	Wayland
	Projects in Conservation	Wayland
ARMSTONG, Patrick H.	Nature's Roundabout: An Introduction to Ecology	Ladybird
CONSTANT, Ann-Marie	Waste Not, Want Not — Air/ Animals/Energy/Food/ Land/Minerals/Plants/Water	Burke
GRAY, Chris	Countryside in Danger	Macmillan
HOLLIMAN, J.	Waste Age Man	Wayland
LOVETT, Patricia	Environment	Batsford
SIMMONS, Gordon E.	What on Earth are We Doing	Ladybird

Fiction

ADAMS, Richard	Watership Down	A. Lane/Penguin
DAHL, Roald	Charlie and the Chocolate Factory (novel or play)	Allen & Unwin Penguin
HUGHES, Ted	*Iron Man: a Story in Five Nights	Faber
LEESON, Robert	Demon Bike Riders	Armada
WALSH, Jill Paton	*Green Book	Macmillan

*particularly recommended

Fiction in Picture Book Format

FOREMAN, Michael	*Dinosaurs and all that Rubbish	H. Hamilton/ Penguin
FOREMAN, Michael	War and Peas	H. Hamilton
HOBAN, Russell	Dancing Tigers	Cape
KEEPING, Charles	*Joseph's Yard	O.U.P.
SIMS, Graeme	Rufus the Fox	Warne
TRIMBY, Michael	Mr. Plum's Paradise	Faber
VENTURE, Peter	Sidney's House	Granada

Audio-Visual Media

Charts

Pollution and You — 10 photos	Pictorial Charts Educational Trust

Slides and Filmstrips

Man-made World	Acorn Media
Why Wildlife?	Acorn Media
Conservation and Pollution (1)	A-V Centre
Conservation and Pollution (2)	A-V Centre
Conservation and Preservation	A-V Centre
Science and the Environment (1)	A-V Centre
Science and the Environment (2)	A-V Centre
Britain's Changing Countryside	Slide Centre
Britain's Changing Towns	Slide Centre

Kits and Multi-Media

Litter: and Environmental Project	
2 kits: ages 7-9 and 10-11	Keep Britain Tidy Group
The Environment	Student Recordings

Author's Postscript

After six months of 'burning the candle at both ends' the package is completed. While I have (more or less) achieved what I intended it is unfortunate that during the period of program development one's aspirations/intentions/aims are evolving. As perfection is unattainable it would be possible to continue making improvements and refinements indefinitely. One must decide to 'finish now but do better next time'.

4MATION was set up to produce software which would extend the use of the computer beyond, "You have got all your tables right — now ZAP an inter-galactic mother ship". Your comments on our material are most welcome: we really do reply.

Additionally it was intended that 4MATION would provide a personal, friendly service and, above all else, reasonable prices. A number of 'mutually beneficial' business arrangements between 4MATION and respected software publishers have been proposed. Such proposals have been (politely) rejected on the grounds that the qualities upon which 4MATION prides itself would be endangered (and Matson would have to stop writing silly comments in teachers' notes).

Final word. Please, please, please remember that the successful completion of the program should not be the aim. What is important is the activity which results from the use of the program. An inspired teacher can make much of an empty crisps packet: 'Flowers of Crystal' is another such stimulus — if slightly more expensive.

Acknowledgements

Disk/Tape Loading Instructions

Disc and Tape

1. Switch ON TV or monitor
2. Switch on micro
3. Switch on disc drive or cassette recorder
4. Ensure ALL leads are correctly connected

Disc

5. Remove disc from sleeve and insert (label uppermost) in drive
6. Hold down SHIFT key — press BREAK key — release SHIFT
7. Following the 4MATION logo the program menu will appear
8. Select program by pressing appropriate key
9. To change program repeat steps 6 — 7 above.

Tape

5. Insert cassette (not audio) into recorder (correct label visible)
6. If DFS fitted type *TAPE (or *T.) and press RETURN
7. Type *CAT (or *.) and press RETURN
8. Rewind tape to the beginning then Fast Forward for a few seconds.
9. Press PLAY and check that the program is 'counting' on the screen
10. If such messages as 'Data', 'Block', 'Header' appear try adjusting volume and/or tone controls on recorder
11. If all appears well use PLAY, FAST FORWARD and REWIND to find the beginning of the required program
12. Rewind to a point just before the program begins NB Each program begins with several small 'header' programs which must not be missed out
13. Press ESCAPE
14. Type CHAIN "xxxx" (xxxx being the program name ie STORY, FLOWERS, UTILITY or CRYSTAL) and press RETURN
15. While the program loads check that no errors occur (see step 10 above) — if they do happen rewind the tape a little
16. Think of ways to afford a disc drive

Note — all programs (disc and cassette users)

Pressing BREAK will destroy the program.

Holding down SHIFT and pressing f0 will re-RUN the program.